

THE PROBLEM.

Delaware's coast faces extreme erosion. Tidal wetlands, in particular, are disappearing at an alarming rate. Wetlands are threatened on two fronts: by both land and by sea.



HOW THIS IMPACTS YOU.

Wetlands are critical to the health and function of the human and non-human communities of the Delaware Estuary. Wetlands act as a sponge to absorb storm surges and flooding, protecting coastal communities from the impacts of weather events. Wetlands also act as a sink for nutrients and other contaminants, improving water quality for organisms that inhabit the water, as well as for humans who use the water. Tidal wetlands sequester more carbon than any other habitat type in the Delaware Estuary. **On average, saltwater tidal wetlands provide \$7,235/acre in ecosystem services, and freshwater tidal wetlands provide \$13,621/acre in ecosystem services.*** Tidal wetlands are a resource that Delaware cannot afford to lose.

A POTENTIAL SOLUTION.

For tidal wetlands to survive sea level rise, they must grow vertically, or migrate horizontally (upland). Coastal infrastructure often impedes horizontal migration, and sufficient land use controls cannot be universally enacted to facilitate such movement. However, we can help some wetlands to grow vertically or otherwise bolster naturally-occurring growth with a coastal stabilization technique known as 'living shorelines.' Living shorelines help vulnerable wetlands to survive while simultaneously enhancing a site's ecological function.

Typically, living shorelines are constructed with natural materials, including live plants and animals. Plantings can be paired with bioengineering materials, such as manmade coconut fiber logs or oyster shell. In some places, living shorelines can prevent erosion as well as bulkheads, but at comparable or lower costs. Living Shorelines come in many varieties, and suit sites with different amounts of wave energy.

Living Shorelines were recognized by a 2010 Partnership for the Delaware Estuary report** as one of the best ways to help tidal wetlands adapt to sea level rise. **If living shorelines are ecologically and (sometimes) economically superior to hard infrastructure, they are routinely installed in other parts of the mid-Atlantic, and they have been successfully installed in the Delaware Estuary, why aren't living shorelines more common along our coasts?** Perhaps there is insufficient scientific data that shows where living shorelines would be successful. Perhaps the associated permitting processes do not provide enough guidance. Perhaps people interested in shoreline stabilization immediately opt for bulkheads because they have never heard of a 'living shoreline.'

All three of these may be issues that have stymied the installation of living shorelines in the Delaware Estuary watershed.



DELAWARE ESTUARY LIVING SHORELINE INITIATIVE

Why you should care (and how to get involved)



By Sari Rothrock¹, Dr. Danielle Kreeger¹, Jennifer Adkins¹, Lisa Wool¹, Laura Whalen¹, Dr. David Bushek², and Joshua Moody²

Partnership for the Delaware Estuary¹ Rutgers Haskin Shellfish Research Laboratory²



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June 2010



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The Partnership for the Delaware Estuary and the Rutgers Haskin Shellfish Research Laboratory pioneered a particular type of living shoreline that capitalizes on mussel-*Spartina alterniflora* symbiosis to help stabilize eroding wetland. The mussel-plant method was successfully used in New Jersey's Heislerville Fish and Wildlife Management Area alongside a marina. The pictures above show the progression of rip-rap to stabilized marsh at this site.

HOW DO WE MAKE THIS HAPPEN?

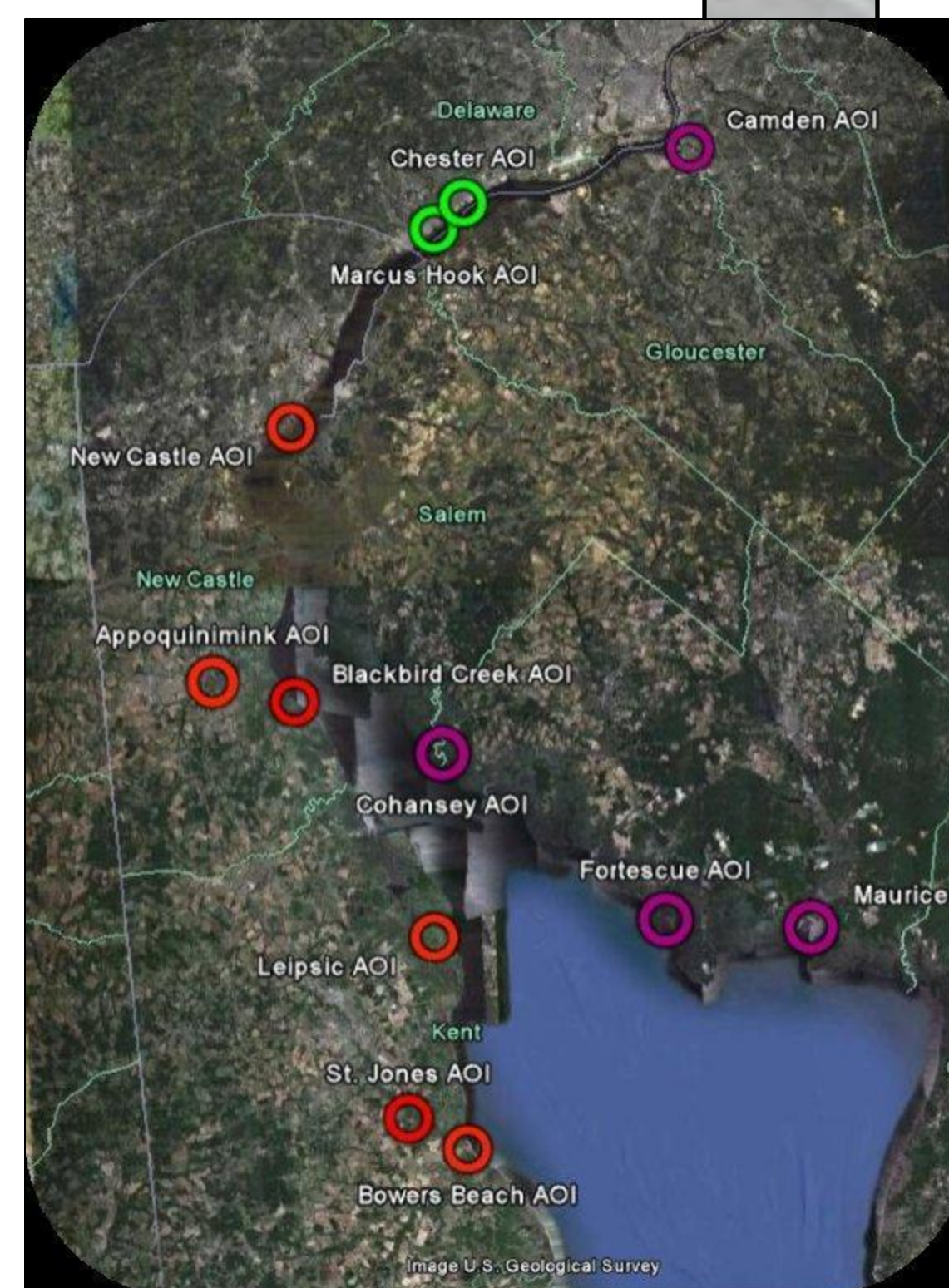
The Partnership for the Delaware Estuary has launched a Delaware Estuary Living Shoreline Initiative (DELSI) to attempt to address the issues that seem to have stalled the installation of living shorelines in the watershed. The PDE is launching DELSI in each of the three states that are within the Delaware Estuary watershed.

1 Collect data



The PDE has been collecting information throughout the Delaware Estuary to identify coastal locations that have potential to benefit from a living shoreline installation. (This includes GIS mapping, field reconnaissance, and data analysis.)

The map at right shows preliminary areas of interest for Living Shorelines throughout the Delaware Estuary.



2 Get practitioners and permitters on the same page



In December 2011, the PDE held a Delaware Living Shorelines Workshop at DNERR's St. Jones Reserve to build support with decision-makers (federal and state regulatory agencies and environmental practitioners), identify barriers, and find ways to navigate challenges to installing living shorelines. We had an excellent turnout and good discussion. A comparable NJ meeting was held this past January, and a plan for a similar PA workshop is in the works.

The map at right shows locations in Delaware where workshop participants thought a living shoreline approach may be feasible to help stabilize eroding wetlands and coast.



3 Talk with community leaders

The PDE plans to hold community workshops to introduce coastal communities to living shorelines and to learn about new places where a living shoreline approach is feasible.

YOU ARE HERE

The Delaware community leader workshop will be held in Delaware City on May 17th from 4:30-6:30. If you live in a community with eroding tidal wetlands, please join us!

Contact Sari Rothrock at (302) 655-4990 ext. 108 or SRothrock@DelawareEstuary.org to sign up for updates.

Funding for the DELSI has been generously provided by:



*Kauffman, G., Homsey, A., Chatterson, S., McVey, E., & Mack, S. (2011). *Socioeconomic Value of the Delaware Estuary Watershed*. Newark: University of Delaware.

**Kreeger, D., Adkins, J., Cole, P., Najjar, R., D, V., Conolly, P., et al. (2010). *Climate Change and the Delaware Estuary: Three Case Studies in Vulnerability Assessment and Adaptation Planning*. Wilmington: Partnership for the Delaware Estuary.